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ABSTRACT

In this review of research findings, the authors identify ten categories of variables that may influence student learning and schools' instructional effectiveness. All the studies reviewed define effectiveness in terms of basic skills achievement, and all limit their research primarily to elementary schools and students with low socioeconomic status. The ten categories comprise (1) principals' achievement expectations and other characteristics; (2) time-related factors, such as time spent in school or time on task; (3) coordination among instructional programs; (4) teacher attitudes and other characteristics; (5) instructional materials and methods; (6) teacher-student interaction, including a discussion of reinforcement techniques; (7) basic skills acquisition; (8) instructional accountability, including teacher and student evaluation; (9) student background characteristics, including family income, race, or residence; and (10) organizational variables such as class size or resource allocation within the school. The research findings indicate that some school-effectiveness variables--including principals' instructional leadership and high expectations, time factors, and teachers' positive reinforcement--correlate highly with student achievement, while other variables are less closely related to achievement. (RW)

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VARIABLES ASSOCIATED WITH EFFECTIVE SCHOOLING

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Variables Associated with Effective Schooling

This paper reviews what is known about variables associated with effective schooling. More specifically, the findings from recent studies and past literature reviews were used to identify a lengthy list of variables which have been coorelated with educational effectiveness.

Several cautions need to be made before turning to a description of these variables. First, it should be noted that schools perform a variety of functions which might contribute to "quality in education"; however, the focus in this review has been on one function of schools -- to provide instruction to students in an effective manner. Most of the current literature related to effective schooling has defined effectiveness in terms of increased achievement in the basic skills (Brophy, 1978; Edmonds, 1979; Weber, 1971; Wellisch, MacQueen, Carriere, & Duck, 1978). Furthermore, the research information presented here is limited primarily to efforts involving elementary schools and low socioeconomic status (SES) groups. Thus, generalizations that involve noncognitive outcomes, secondary schools, and students from middle or high SES groups may be inappropriate.

Introduction

A number of studies have attempted to determine if differences in schooling make a difference in what students learn. Large-scale input/output studies (Averch, Carrell, Donaldson, Kiesling, & Pincus, 1972; Coleman, Campbell, Hobson, McPartland, Mood, Weinfeld, & York, 1966; Mayeske, Wisler, Beaton, Weinfeld, Cohen, Okada, Proslek, & Tabler, 1969) have suggested that measureable differences between schools are only slightly related to student learning. Particular resources that

seem to be significant in one study did not always prove to be significant in other studies which included the same resources. Background factors, on the other hand, always seem to be important. Background variables which are usually significant predictors of achievement include parents' income, education, and occupation. In general, findings from the large-scale input/output studies lead to the conclusion that school variables have no effect on student achievement. Such a conclusion, however, is untenable to most educators. Therefore, educators find some encouragement in the more recent work on school effects by McDonald (1976), Stallings (1973), and Wiley and Harneschfeger (1974). These studies have shown stronger relationships between various aspects of schooling and student learning outcomes.

One reason findings differ is the focus of the more recent work on what happens at the classroom level rather than the school level. Also, recent emphasis has been placed on the contextual setting, the influence of which is being recognized as increasingly important. Brophy (1979) points out that many variables are stable within contexts but not across contexts. In other words, what works in one setting may not work in all settings.

The remainder of this discussion will define a number of variables and summarize research support for each variable.

Variables Which May Influence Student Learning and School Effectiveness

The number of school variables that have been identified in different research studies as being important influences on student learning outcomes is quite large. To facilitate a discussion of these school

variables, they have been grouped into ten categories. These categories are listed below:

1. Principal characteristics
2. Time-related factors
3. Program coordination
4. Teacher characteristics
5. Instructional materials and methods
6. Teacher/student interactions
7. Instructional emphasis
8. Instructional accountability
9. Student background characteristics
10. Organizational variables

The remainder of this section describes and defines the ten categories and the variables that are contained in the categories. In addition, some of the available research that supports the importance of these variables is described. Most variables are supported by research, although the findings are sometimes equivocal. Thus, all variables should be viewed as possible, and in some cases probable, influences on student learning.

Principal Characteristics

Current research is giving increasing support to the importance of the principal's role in effective schooling. Two of the characteristics associated with a majority of principals in effective schools include instructional leadership and high expectations of students and staff.

Instructional leadership. The characteristic of principals that seems to be most consistent across a number of different studies is

instructional leadership (Ellis, 1975; Trisman, Waller, & Wilder, 1975; Wellisch et al., 1978). Instructional leadership includes having definite ideas about instruction, promoting a point of view, communication of ideas concerning instruction, and the extent to which the instructional program is controlled by the principal.

The input/output studies related to administrative leadership generally have not yielded definitive conclusions. For example, two studies found that principals' and superintendents' salaries were related to student achievement. The authors of these studies inferred that the relevance of salary (a status variable) must be in "administrative quality" (a process variable) (New York State University, 1972). As one would note, this is not a very direct relationship.

A case study examining process variables was used by Weber (1971) to conclude that the success of exemplary inner-city schools could be accounted for by "strong leadership" involving initiative and program direction. More recently, several studies have combined case study and survey techniques to conclude that administrative leadership in instruction is related to whether or not schools are successful in promoting academic achievement (California State Department of Education, 1977; Ellis, 1975; Michigan State Department of Education, 1976; Trisman et al., 1975; Wellisch et al., 1976).

A recent study (Wellisch et al., 1978) operationally defined administrative leadership of instruction as strength of feeling about instruction, communication of ideas concerning instruction, and extent to which responsibility for instruction is assumed. This study concluded that instructional programs benefited from direction and leadership as defined.

A series of studies funded in part by the National Institute of Education was recently conducted by journalists who were attempting to identify what makes an effective school. As a part of this series of studies, Reilly (1980) and Benjamin (1980) both found that the best schools generally had strong instructional leaders who were most often the principals.

High expectations or academic standards. Results concerning academic standards have been inconclusive. A classic study done in 1919 (Klene & Branson, 1929) found that achievement of failing students who repeated grades was not significantly different from failing students who were promoted. A review of the literature by the Philadelphia school system in 1973 concluded that retention was slightly less effective than social promotion when psychological and social outcomes were considered in addition to academic outcomes (Reiter, 1973). Other research has reached the opposite conclusion. Levin (1966) found that automatic promotion removed incentives and denied students the opportunity to demonstrate the personal competence on which self-confidence is based.

More recently, Wellisch et al. (1978) concluded that administrators in successful schools emphasized academic standards by reviewing teacher performance, by opposing postponement of basic skills instruction, and by requiring students to repeat grades when standards for achievement were not met. In a study to identify what makes an effective school, Reilly (1980) found that effective school leaders have high expections of both students and teachers.

Time-Related Factors

Most educators would agree that children who spend more time in learning-related activities will learn more than those who do not. In

other words, students' opportunity to learn materials is a major determinant of their learning. The overall importance of time-to-learn has been emphasized by Carroll (1963) and Bloom (1974). Connolly and McGrail (1978) defined the concept of time as the extent to which time is used as a resource to provide maximum opportunity for student learning. Three variables may be included under the concept of time: time in school, time allotted for academic activities, and engaged time.

Time in school. Increasing the total amount of school time does not insure increases in student achievement; however, such increases in total time do at least provide more opportunity for student learning. A number of studies (Bond & Dykstra, 1967; Rosenshine, 1971; Wiley & Harnischfeger, 1974) have shown significant relationships between more time in school and student learning. Bond and Dykstra (1967) found that a longer school day was significantly correlated with reading achievement in the first grade. In another study related to time in school, the number of days of student and teacher absence was significantly related to student learning (Rosenshine, 1971). In studying the quantity of schooling and exposure to instruction, Wiley and Harnischfeger (1974) found that the total number of hours of schooling provided in a school year seems to vary a great deal among schools. Furthermore, the Wiley and Harnischfeger study revealed that differences in total hours of schooling were correlated with student achievement.

Time allotted for academic activities. Depending upon the instructional emphasis in a school, varying amounts of time are allocated to instruction in academic areas (e.g., reading, mathematics, social studies, science/health, etc.) and nonacademic areas (e.g., arts and crafts, music, etc.). Several studies have revealed that student

learning in a particular subject-matter area seems to be related to the amount of time allotted to that area (Fisher, Filby, Marliave, Cahen, Dishaw, Moore, & Berliner, 1978; McDonald, Elias, Stone, Wheeler, Lambert, Calfee, Sandoval, Eckstrom, & Lockheed, 1975; Stallings & Kaskowitz, 1974). Thus, it would seem reasonable to allocate more time to a priority area where an increase in achievement was deemed important. Where to get the additional time for a priority area is another problem. Possible alternatives include reducing time for field trips and assemblies, increasing the length of the day or number of days in a year, or decreasing the time allotted to a non-priority area.

Engaged time. Engaged time is defined as that time a student is actually participating in learning activities. In studying this definition of time, Rosenshine and Berliner (1978) concluded that academic engaged time is a major determinant of learning. The amount of engaged time varies greatly among schools. Knecht and Grobe (1979) found that engaged time differed among elementary schools using different reading programs. LeCompte (1979) found that 50 to 60 percent of classroom interactions between teachers and students were not related to content but were for the purpose of stating rules, beginning or ending activities, or disciplining students.

It should be noted that while allotted time depends largely upon decisions by the principal and other school officials, engaged time depends mostly on the classroom teacher's managerial skills. When the teacher has effective classroom management skills, activities unrelated to content can be minimized. Consequently, teacher time-on-task and student engaged time can be maximized. Brophy and Evertson (1974, 1976) concluded that teachers who produce achievement gains in their students

tend to be effective classroom managers. Effective classroom management is defined and discussed in more detail in the section entitled "Teacher Characteristics."

Program Coordination

Most educators agree that students learn best when they move through a coordinated instructional program. However, few research studies have identified a clear relationship between program coordination and increased student learning. A two-year study of Michigan schools found program organization to be associated with higher reading achievement (Michigan State Department of Education, 1976). A study of 22 elementary schools found that coordination of instructional programs throughout the school was significantly related to school success in raising reading and math achievement of disadvantaged and low-achieving students (Wellisch et al., 1978). A coordinated instructional program is defined as a program in which (a) instruction at one grade level or content area supports instruction in other grade levels or content areas (instructional articulation); and (b) there is a high relationship among the goals of instruction, the content of instruction, and the measures of student achievement (instructional integration).

Instructional articulation. The simple presence of a schoolwide plan for integrating instruction across grade levels and content areas is an indication of the level of articulation of instruction in a school. The development of such a plan requires careful consideration of transitions from one grade level to another to insure that students have prerequisite skills or further opportunities to acquire them. Also required is a detailed plan for reinforcing the development of certain skill areas in different content areas at the same grade level.

Let us consider some examples of instructional articulation. Fourth-grade students probably learn better when they learn the computational skills during the fourth-grade that are necessary to do the computation work required in fourth-grade science experiments. Further, work in science can be used to reinforce the arithmetic skills that are learned. In addition, the fourth-grade arithmetic program should end where the fifth-grade program can begin; otherwise, fifth-grade students will not be adequately prepared.

Instructional integration. As mentioned earlier, instructional integration relates to the degree of relationship among goals of instruction, content of instruction, and measures of student achievement. Most educators feel that student learning relative to specific goals is greatly facilitated when there is a great deal of overlap between the goals and the content the teacher actually provides in the classroom. Another aspect of instructional integration relates to the idea that students should be taught the content which is covered by those tests used to measure achievement in the classroom. More appropriately, tests should be designed to assess the content taught in the classroom. While the need for instructional integration may appear obvious, it is not uncommon to find instructional programs in schools that have instructional content which is not related to the goals, and assessment measures which are not related to the instructional content (Rosenshine, 1976).

Program Coordination Summary. While research in the area is limited, program coordination is viewed as an important feature of educational programs by many educators participating in school improvement efforts.

Apparently, the need for program coordination is thought to be intuitively obvious.

Teacher Characteristics

Many researchers and educators have used the teacher as the focal point of their studies. However, it is only in the last decade that a body of knowledge linking teacher behavior to student achievement has begun to emerge. Influential reviews by Rosenshine and Furst (1973) and by Dunkin and Biddle (1974) helped synthesize and define research on teaching. In addition, a number of comprehensive reviews have been conducted which detail some of the more recent research (Borich & Fenton, 1977; Brophy, 1979; Gage, 1978; Good, 1979).

The findings reported in this section have been limited to those having more support based in research. The discussion of these findings is organized around four areas: attitudes, expectations, expertise, and behavior.

Attitudes. Teacher attitudes about the nature or quality of the instructional program are generally related to the extent of agreement with the overall philosophy of the school, the goals of instruction, the instructional content and methods, and the measures of achievement. Satisfaction with the work setting concerns the teachers' feelings about a number of organizational variables such as salaries, class size, and work-schedule. This area has often been proposed by educators as a variable that affects student achievement; however, little research is presently available to support such a conclusion.

Expectations. Research indicates that teacher expectations and teacher acceptance of instructional responsibility have an effect on student achievement. In reviewing numerous case studies and experimental

studies, Brophy and Good (1972, 1974) concluded that teacher expectations can and often do affect how much students learn. As an example, teachers may focus their attention and provide the most rewards to students who are perceived or expected to be fast learners (Rist, 1973). Typically, the more successful teachers perceive their students as capable of learning the material. These teachers also tend to set higher goals for themselves and their students than other teachers.

Teacher acceptance of instructional responsibility is closely related to expectations in that teachers who believe that all students are capable of high achievement are more likely to assume responsibility for seeing to it that the students do achieve at high levels (Brookover, Beady, Flood, Schweitzer, & Wisenbaker, 1979). The following statement by (Brookover et al., 1979) is an insightful comment on the relationship between expectations and instructional responsibility:

> Once adverse out-of-school environmental factors are viewed as inhibitors of, not determinants of, higher academic achievement, academic success for poor and minority students becomes an attainable and realistic goal. (p. 134)

As a point of emphasis, the ideas just presented will be restated. Student learning will be enhanced to the extent that the teacher assumes all students in the classroom are capable of mastering the instructional content. Chances of higher achievement will be further increased if the teacher assumes the responsibility for instruction and sees it as his/her job to overcome inhibiting environmental factors.

Expertise. Teacher knowledge of the content area and the teaching process is thought to affect student learning in a positive manner. Researchers have found support for a positive relationship between content area knowledge of the teacher and student learning (Bidwell and

Kasarda, 1975; Delaware Department of Public Instruction, 1977). Limited support for a relationship between knowledge of the teaching process and increased student learning was found in a study of North Carolina schools (Radio Broadcast, 1981). In this study, students of teachers who scored higher on the National Teachers Examination (NTE) demonstrated greater achievement gains. The NTE assesses both knowledge of content and knowledge of general education. In general, research seems to suggest that a teacher who is knowledgeable in reading or mathematics content, at least on a basic level, is better able to teach it to students.

Classroom management skills. Generally, the teacher behaviors which most often affect student learning are related to classroom management skill. A major reason that classroom management skills correlate with student learning gains is that good classroom managers maximize student engaged time on task (Brophy, 1979).

Research studies concerning variables related to classroom management indicate that teachers who are task-oriented (Rosenshine, 1976), hardworking and well-organized (Salganik, 1980), and labor to overcome obstacles in attaining high student-outcome-related goals (Brophy and Evertson, 1976) are more successful in getting students to learn basic skills. Additional characteristics identified by Kounin (1970) as keys to effective classroom management include the ability to (a) monitor the entire class; (b) do two or more things simultaneously without having to break the flow of classroom events; (c) move activities along at a good pace, without confusion or loss of focus; and (d) provide seatwork that is at the right level of difficulty for students and is interesting enough to hold their attention.

Instructional Materials and Methods

Many aspects of instructional materials and methods can be discussed; however, this section will focus on some of the aspects which have been supported by research. Specifically, there seems to be considerable research support for using a structured curriculum and related variables which are referred to as direct instruction. Other variables which can be supported in the research literature include pacing, student placement, variety of instructional materials and methods, appropriate content, and aesthetic appeal of materials.

Structured curriculum/direct instruction. In a review of research on classroom instruction, Rosenshine (1976) found a significant positive relationship between academic achievement and direct time, factual questions, positive teacher feedback, supervised study in groups, and student attention to task. These variables can be placed into a tentative pattern labelled direct instruction. Dunkin and Biddle (1974) also found supervised group work to be significantly related to student achievement. Brophy (1979), in reviewing research related to direct instruction, concluded that students learned better from a structured curriculum. Further support for the specific aspects of direct teaching at the early elementary grades is found in studies of teacher structuring (Gage, 1976, 1978; Zimmerman & Jaffe, 1977), time and directed learning (Bloom, 1974), questioning strategies (Wright & Nuthall, 1970), and teacher-centered instruction (Brophy & Evertson, 1976; Good and Grouws, 1975; Greeno, 1978).

As noted in this discussion, direct instruction includes at least six variables: direct time, factual questions, positive teacher feedback, supervised study in groups, student attention to task, and

teacher-centered instruction. Direct time (or engaged time) will not be discussed in detail since it was covered in a previous section. However, it is important to note that direct time is associated with improved achievement when structured by the teacher with a large part of the instructional time allocated to a number of reading activities, and to a lesser degree, mathematics.

Studies related to questioning strategies suggest that questions should be factual, narrow, direct, usually with a single answer, and structured to obtain a high percentage of correct answers (Wright & Nuthall, 1970). One study found that successful teachers ask questions such that about 75 percent of the answers are correct (Brophy & Evertson, 1974). Further, teachers successful in increasing student achievement are more likely to move around the group in a predetermined, fixed order rather than by calling on students "randomly". Such teachers are also more likely to insure that each student receives quality response opportunities and feedback when called upon to recite (Anderson, Evertson & Brophy, 1978; Brophy & Evertson, 1976).

Positive teacher feedback using praise and acknowledgement of student answers is important (Rosenshine, 1976). Further, Rosenshine found that teacher criticism produced negative achievement results.

Generally, those students who receive much of their instruction directly from the teacher do better than those expected to learn on their own (Good, 1979; Wright, 1975; Zimmerman & Jaffe, 1977). In this type of teacher-directed study, there should be little free time or independent or unsupervised activity.

Student attention to task is emphasized. This emphasis is accomplished by using the systematic, structured, supervised setting

discussed earlier (Gage, 1976, 1978; Zimmermanm & Jaffe, 1977).

Teacher-centered instruction is another key to successful direct instruction (Brophy & Evertson, 1976; Good & Grouws, 1975; Greeno, 1978). The teacher decides which activities will take place. The learning is organized around questions posed by the teacher or the materials. The materials and instruction are systematically organized, proceeding in small steps.

Based upon the findings presented several conclusions can be drawn. Students taught with a structured curriculum do better than those taught with more individualized or discovery learning approaches, and those who receive much of their instruction directly from the teacher do better than those expected to learn on their own or from one another. In addition, student learning seems to be enhanced by the use of specific objectives, a clearly defined instructional sequence, frequent assessments of student progress, and feedback to students on their performance.

Pacing. Pacing is the speed with which students move through the material to be learned. Theoretically, one would expect a curvilinear relationship between rates of pacing and amount learned. In other words, if the pace is too slow, material will not be covered and thus not learned; if the pace is to fast, material will be covered but most students will not be able to keep up and thus the material will not be learned. However, most studies reveal a simple positive relationship with the more successful teachers being those who move the class along at a brisk pace (Barr, 1975; Carnine, 1976; Good, Grouws & Beckerman, 1978). It must be emphasized that the brisk pace alluded to must be over material that is at the right (appropriate) level of difficulty. As a

related point, several recent studies suggest that it is important to structure the brisk pace through teaching activities and materials such that students can have a high level of success (Crawford, 1978; Jorgenson, 1977). As a guideline for determining what a high level of success is for students, an earlier discussion indicated that successful teachers ask questions with a 75 percent correct response rate (Brophy & Evertson, 1974). With these findings, some tentative conclusions can be stated. First, successful teachers move students briskly from step to step. Second, these steps must be kept small and within the grasp of most students so that a high success rate can be maintained.

Student placement. Some curriculum programs have provisions for matching students to instructional materials that are best suited to their needs and interests. For instance, pretests may be used to place students at appropriate levels in an instructional sequence. In addition to the test information, a teacher might use his or her own judgment, progress reports, or student recommendations for assigning students to groups. Such a combination of systematic procedures is most likely to achieve the best fit between student needs and appropriate instructional activities (Connolly & McGrail, 1978). Accurate placement in an instructional sequence with respect to each student's needs appears to contribute to student learning (Cooley & Leinhardt, 1975).

Variety of instructional materials and methods. Cooley and Leinhardt (1975) suggest that a variety of materials (e.g., textbooks, workbooks, filmstrips) stimulate student interest and motivate learning. In additions, there is some research support for matching learning styles of students to different modes of instruction (e.g., audio, visual, and printed materials) (Cronbach & Snow, 1977). However, the practical

application of this work to classroom settings is not very well defined (Snow, 1977). Additional work in this area has continued. Some practical applications are being attempted in the Dallas Community College System (Olson, 1981).

Appropriate content of materials. The appropriateness of instructional content is similar to a variable studied by Cooley and Leinhardt (1975). They found that to be optimally effective, instructional materials should address content (i.e., people, places, things) which is familiar to students and contained in their experiential background. As guidelines, the appropriateness of content for particular groups of students should be based upon their age, environment, cultural heritage, and regional experiences.

Aesthetic appeal of materials. Another characteristic of instructional materials which may be of importance in facilitating student learning is the degree to which the materials are aesthetically pleasing to the student. That is, the appearance of the materials (e.g., print, format, color, graphics) may attract and motivate the student. The word may has been used in the two preceeding statements because research support is somewhat equivocal.

Teacher/Student Interaction

Teacher/student interactions take a variety of different forms. Such interactions include lecturing to the class, working with groups, questioning students, tutoring individual students, and providing feedback on tests or papers. In this section, the discussion will focus on the actual interaction, associated reinforcement techniques, and some "context-specific" relationships.

Interactions. To be effective in impacting student learning, interactions must be related to the content of instruction. As discussed earlier, one type of interaction which has received considerable research support is the use of direct questions that have an academic focus (see direct instruction). Another aspect of student/teacher interaction that seems to facilitate learning is the degree to which all students are involved in some type of interaction. This is directly related to expectations; when teachers have low expectations for certain students, they may skip over them during classroom recitations or discussions and may address themselves more to controlling conduct than to instruction in the curriculum (Brophy & Good, 1974). The use of "patterned turns or questions" is a technique that can be used to increase the probability that all students will be involved (Brophy & Evertson, 1976).

Reinforcement techniques. Research on the relationship between student learning and reinforcement reveals three relatively consistent findings: (a) feedback should be accurate; (b) feedback should be immediate; and (c) positive reinforcement should be used for good performance (Connolly & McGrail, 1978). While the idea that teachers should provide accurate feedback to students on class questions, tests, and written assignments may appear obvious, research studies suggest that teacher reinforcement for correct and incorrect responses is highly erratic and often inaccurate (Doyle, 1980).

Support for or against the immediacy of feedback was not found in current literature. However, the concept is intuitively appealing and will probably continue to be widely used. While research on the use of positive reinforcement for good performance is difficult to interpret, some studies do illustrate that positive teacher reactions facilitate

student achievement more than minimal or negative reactions (Brophy & Evertson, 1976; Friedman, 1973; Hughes, 1973; Rosenfeld, 1972).

Context-specific relationships. Some of the current research indicates that appropriate teacher/student interactions may vary according to the context or setting (Brophy & Evertson, 1976). A study of the most successful teachers of high SES students revealed that motivation was strengthened through challenge and the enforcement of high standards. A strict discipline was also present which involved a refusal to accept inferior work and criticizing or punishing students when necessary. Teachers identified as most successful with low SES or low ability groups motivated students primarily through warmth and encouragement rather than being businesslike and demanding. It should be noted that these teachers were just as determined to get the most out of the students, but used different methods. They praised and encouraged much more often and minimized criticism of poor work, but did not necessarily minimize criticism of inappropriate conduct.

Instructional Emphasis

Several authors and researchers suggest that the more successful schools have selected the acquisition of basic skills as the highest priority (Benjamin, 1979; Brookover, 1979; Edmonds, 1979; Fedigan, 1979; Weber, 1971) elaborates this position in the following statement:

> Educational leaders should reduce the emphasis on differential goals and objectives for students and increase the emphasis on the mastery of basic skills by all students. Such an emphasis would focus more attention on the mastery of basic objectives by the group as a whole and reduce the current emphasis on differentiated instructional programs which may not achieve such objectives. (p. 80)

In general, schools which are successful in increasing achievement seem to have an instructional emphasis on the basic skills. A negative relationship has been found between increasing achievement and an emphasis on human relations (Benjamin, 1979; Venezky & Winfield, 1979).

Instructional Accountability

Three areas will be discussed with regard to instructional accountability: student evaluation, teacher evaluation, and general accountability systems. Frequent evaluation, assessment, or testing of students has been found in schools which are more successful in terms of increasing achievement (Brookover et al., 1979; Edmonds, 1979). Further, in such schools, testing and assessment are viewed as an integral part of the instructional process.

Brookover et al. (1979) and Wellisch et al. (1978) have found that students whose teachers feel responsible for student achievement tend to do better. This feeling of responsibility may be internally or externally motivated. In other words, some teachers see their job as being to get all students to perform at a high level and are internally motivated by accomplishing their objectives. Other teachers may need to be externally motivated by being held accountable through teacher evaluation procedures. Regardless of the type of motivation, teachers who feel responsible tend to do a better job of teaching basic skills.

In a large-scale study of school effectiveness, Hunter and Rumbaugh (1976) found that the degree to which an overall accountability system had been implemented was positively associated with student achievement. This finding is closely related to the external motivation of teachers to take on the feeling of responsibility for student learning.

Student Background Characteristics

Characteristics related to students' backgrounds have generally been examined in large-scale input-output studies (Coleman, 1966; Mayeske et al., 1969). An important and repeated finding of these studies which searched for answers to questions about educational achievement has been that students' backgrounds (i.e., family income and race, among other things) prove to be significant predictors of their performance in school (Averch et al., 1972; Summers and Wolfe, 1976). The reader should note that this conclusion is not accepted unequivocally. Brookover (1979) emphasizes that while students' academic achievement may be highly correlated with background variables, it most definitely is not determined by their race, their neighborhood, or their economic status. Further, he indicated that out-of-school environmental factors should be viewed as inhibitors, not determinants, of higher academic achievement.

Organizational Variables

Organizational variables which have been the subject of studies include class size (Summers and Wolfe, 1976), facilities (Salganik, 1979), flexible allocation of resources at the building level (Edmonds, 1979) and size of school (Summers and Wolfe, 1976). Results from these studies have been generally inconclusive.

Conclusion

In conclusion, research studies have been conducted on the relationship between effective schooling and numerous variables. Finding reveal, for example, that strong instructional leadership, high expectations of students and staff, time related factors, use of positive reinforcement, and other variables correlate positively to effective schools. The research on certain other variables has been inconclusive.

References

Anderson, L., Evertson, C., & Brophy, J. The first-grade reading group study: Technical report of experimental effects and process-outcome relationships (Report No. 4070). Austin, TX: University of Texas, Research and Development Center for Teacher Education, 1978.

Averch, H. A., Carrell, S. I., Donaldson, T. S., Kiesling, H. J., & Pincus, J. How effective is schooling? A critical review and synthesis of research findings (RAND Tech. Rep. R-956-PCSF/RC). Santa Monica, CA: RAND Corporation, 1972.

Barr, R. How children are taught to read: Grouping and pacing. School Review, 1975, 83, 479-498.

Benjamin, R. Toward effective urban schools: A national study. In D. Brundage (Ed.), The journalism research fellows report: What makes an effective school? Washington, D. C.: Institute for Educational leadership, 1980.

Bidwell, C. E., & Kasarda, J. E. School district organization and student achievement. American Sociological Review, 1975, 40, 55-70.

Bloom, B. S. Time and learning. American Psychologist, 1974, 29, 682-688.

Bond, G. L., & Dykstra, R. The cooperative research program in first grade reading instruction. Reading Research Quarterly, 1967, 2 (4), 5-142.

Borich, G., & Fenton, K. (Eds.). The appraisal of teaching: Concepts and process. Reading, Mass.: Addison-Wesley, 1977.

Brookover, W., Beady, C., Flood, P., Schweitzer, J., & Wisenbaker, J. School social systems and student achievement: Schools can make a difference. Brooklyn, NY: J. F. Bergin Publishers, Inc., 1979.

Brookover, W. B., & Lezotte, L. W. Changes in school characteristics coincident with changes in student achievement. East Lansing: Michigan State University, College of Urban Development, 1977.

Brophy, J. E. Teacher behavior and its effects. Journal of Educational Psychology, 1979, 71, 733-750.

Brophy, J., & Evertson, C. The Texas teacher effectiveness project: Presentation of non-linear relationships and summary discussion (Report No 74-6). Austin, TX: University of Texas, Research and Development Center for Teacher Education, 1974.

Brophy, J., & Evertson, C. Learning from teaching: A developmental perspective. Boston: Allyn & Bacon, 1976.

Brophy, J. E., & Good, T. Teacher expectations: Beyond the Pygmalion controversy. Phi Delta Kappan, 1972, 54, 276-278.

Brophy, J. E., and Good, T. Teacher-student relationships: Causes and consequences. New York: Holt, Rinehart, & Winston, 1974.

California State Department of Education. California school effectiveness study, the first year: 1974-75. Sacramento, CA: California State Department of Education, 1977.

Carnine, D. Effects of two teacher-presentation rates on off-task behavior, answering correctly and participation. Journal of Applied Behavior Analysis, 1976, 9, 199-206.

Carroll, J. B. A model for school learning. Teachers College Record, 1963, 64, 723-733.

Coleman, J. S., Campbell, E. Q., Hobson, C. J., McPartland, J., Mood, A. M., Weinfeld, F. D., & York, R. L. Equality of educational opportunity. Washington, D. C.: Superintendent of Documents, U.S. Government Printing Office, 1966.

Connolly, J. A., & McGrail, J. School variables affecting student learning. Washington, D. C.: National Institute of Education, 1978. (ERIC Reproduction Service No. ED 179 555).

Cooley, W. W., & Leinhardt, G. The application of a model for investigating classroom processes. Pittsburgh: University of Pittsburgh, Learning Research and Development Center, 1975.

Crawford, J. Interactions of learner charcteristics with the difficulty level of the instruction. Journal of Educational Psychology, 1978, 70, 523-531.

Cronbach, L. & Snow, R. Aptitudes and instructional methods: A handbook for research on interactions. New York: Irvington, 1977.

Delaware Department of Public Instruction. Delaware educational accountability case studies: Elementary schools, grades 1-4 (a report of results). Dover, DE.: Department of Public Instruction, 1977.

Doyle, W. Paradigms for research on teacher effectiveness. In L. S. Shulman (Ed.), Review of research in education. Itasca, IL.: F. E. Peacock, 1980.

Dunkin, M. J., & Biddle, B. J. The study of teaching. New York: Holt, Rinehart, & Winston, 1974.

Edmonds, R. Effective schools for the urban poor. Educational Leadership, October 1979, 15-24.

Ellis, A. B. Success and failure: A summary of findings and recommendations for improving elementary reading in Massachusetts city schools. Waterton, MA.: Educational Research Corporation, 1975.

Fedigan, L. School-based elements related to achievement: A review of the literature. Edmonton, Alberta. Alberta Department of Education, Planning and Research Branch, 1979. (ERIC Document Reproduction Service No. ED 181 043).

Fisher, C., Filby, N., Marliave, R., Cahen, L., Dishaw, M., Moore, J., & Berliner, D. Teaching behaviors, academic learning time and student achievement: Final report of Phase III-B, beginning teacher evaluation study. San Francisco: Far West Laboratory for Educational Research and Development, 1978.

Friedman, P. The relationship of teacher reinforcement to spontaneous student verbalization within the classroom. Journal of Educational Psychology, 1973, 65, 59-64.

Gage, N. L. A factorially designed experiment on teacher structuring. Journal of Teacher Education, 1976, 27 (1), 35-38.

Gage, N. L. The scientific basis of the art of teaching. New York: Columbia University, Teachers College Press, 1978.

Good, T. Teacher effectiveness in the elementary school: What we know about it now. Journal of Teacher Education, 1979, 30, 52-64.

Good, T., & Grouws, D. The Missouri mathematics effectiveness project: A program of naturalistic and experimental research. Paper presented at the annual meeting of the American Educational Research Association, Toronto, Canada, March 1978.

Good, T., Grouws, D., & Beckerman, T. Curriculum pacing: Some empirical data in mathematics. Journal of Curriculum Studies, 1978, 10, 75-81.

Greeno, J. Understanding and procedural knowledge in mathematics instruction. Educational Psychologist, 1978, 12, 262-283.

Hughes, D. C. An experimental investigation of the effects of pupil responding and teacher reacting on pupil achievement. American Educational Research Journal, 1973, 10, 21-37.

Hunter, M. G., & Rumbaugh, S. A. The study of school effectiveness: Michigan cost-effectiveness study. Lansing, MI: Michigan Department of Education, April 1976. (ERIC Reproduction Service No. ED 127 660)

Jorgenson, G. Relationship of classroom behavior to the accuracy of the match between material difficulty and student ability. Journal of Educational Psychology, 1977, 69, 24-32.

Klene, V., & Branson, E. Trial promotion versus failure. Educational Research Bulletin, 1929.

Knecht, M., & Grobe, R. P. Evaluation of the 1978-79 Dunbar SUCCESS program (Report No. SP79-408-31-01). Dallas, TX: Dallas Independent School District, Department of Research, Evaluation, and Information Systems, 1979.

Kounin, J. Discipline and group management in classrooms. New York: Holt, Rinehart & Winston, 1970.

LeCompte, M. Learning to work: The hidden curriculum of the classroom. Anthropology and Education Quarterly, 1979, 9 (1), 22-37.

Levin, D. U. Raising standards in the inner city schools (Occasional Papers, No. 11). Washington, D. C.: Council for Basic Education, December 1966.

Mayeske, G. W., Wisler, C. E., Beaton, A. E., Weinfeld, F. D., Cohen, W. M., Okada, T., Proshek, J. M., & Tabler, K. A. A study of our nation's schools. Washington, D. C.: U.S. Government Printing Office, 1969.

McDonald, F. J. Executive summary report: Beginning teacher evaluation study, Phase II. Princeton, N.J.: Educational Testing Service, 1976.

McDonald, F., Elias, P., Stone, M., Wheeler, P., Lambert, N., Calfee, R., Sandoval, J., Ekstrom, R., & Lockheed, M. Final report on Phase II beginning teacher evaluation study. Princeton, N.J.: Educational Testing Service, 1975.

Michigan State Department of Education. Report of the 1974-75 Michigan cost-effectiveness study. Washington, D. C.: Capital Publications, 1976.

New York State University. Variables related to student performance and resource allocation decisions at the school district level. Albany, NY: New York State University, State Education Department, Bureau of School Programs Evaluation, 1972.

Olson, G. Personal communication, March 18, 1981.

Radio Broadcast, February 1981.

Reilly, W. What's effective in the rural schools of Maine: In D. Brundage (Ed.), The journalism research fellows report: What makes an effective school? Washington, D. C.: Institute for Educational Leadership, 1980.

Reiter, R. G. The promotion/retention dilemma: What research tells us. (Report No. 7416). Philadelphia: Philadelphia School District, Office of Research and Evaluation, 1973.

Rist, R. Student social class and teacher expectations: The self-fulfilling prophecy in ghetto education. Harvard Educational Review, 1970, 40, 411-451.

Rosenfeld, G. W. Some effects of reinforcement on achievement and behavior in a regular classroom. Educational Psychology, 1972, 63, 189-193.

Rosenshine, B. Classroom instruction. In N. L. Gage (Ed.), The psychology of teaching methods. Seventy-fifth yearbook of the National Society for the Study of Education (Pt. 1). Chicago, IL: University of Chicago Press, 1976.

Rosenshine, B. Teaching behaviors and student achievement. London: National Foundation for Educational Research in England and Wales, 1971.

Rosenshine, B., & Berliner, D. Academic engaged time. British Journal of Teacher Education, 1978, 4, 3-16.

Rosenshine, B., & Furst, N. The use of direct observation to study teaching. In R. Travers (Ed.), Second Handbook of research on teaching. Chicago: Rand-McNally, 1973.

Salganik, M. W. Teachers busy teaching make city's 16 'best' schools stand out. In D. Brundage (Ed.), The journalism research fellows report: What makes an effective school? Washington, D. C.: Institute for Educational Leadership, 1980.

Snow, R. E. Individual differences and instructional theory. Educational Researcher, 1977, 6 (10), 11-15.

Stallings, J. A. Follow Through program classroom observation evaluation 1971-72. Menlo Park, CA: Stanford Research Institute, 1973.

Stallings, J. A., & Kaskowitz, D. H. Follow Through classroom observation evaluation 1972-73 (SRI Project No. URU-7370). Menlo Park, CA: Stanford Research Institute, 1974.

Summers, A. A., and Wolfe, B. L. Which school resources help learning? Efficency and equity in Philadelphia public schools. IRCD Bulletin, 1976, 11 (3), 1-15.

Trisman, D. A., Waller, M. I., & Wilder, G. A descriptive and analytic study of compensatory reading programs: Final report (Volume I). Princeton, N.J.: Educational Testing Service, 1975.

Venezky, R. L., & Winfield, L. Schools that succeed beyond expectations in teaching reading (Technical Report No. 1). Newark, DE: University of Delaware, Department of Educational Studies, August 1979.

Weber, G. Inner-city children can be taught to read: Four successful schools (Occasional Papers No 18). Washington, D. C.: Council for Basic Education, 1971.

Wellisch, J. B., MacQueen, A. H., Carriere, R. A., & Duck, G. A. School management and organization in successful schools. Sociology of Education, 1978, 51, 211-226.

Wellisch, J. B., Marcus, A. H., MacQueen, C. A. & Duck, G. A. An in-depth study of Emergency School Aid Act (ESAA) schools: 1974-75. Santa Monica: System Development Corporation, 1976.

Wiley, D. E., and Harneschfeger, A. Explosion of a myth: Quantity of schooling and exposure to instruction, major educational vehicles. Educational Researcher, 1974, 3, 7-12.

Wright, C. J., & Nuthall, G. Relationships between teacher behaviors and pupil achievement in these experimental elementary science lessons. American Educational Research Journal, 1970, 7, 477-491.

Zimmerman, B., & Jaffe, A. Teaching through demonstration: The effect of structuring, imitation, and age. Journal of Educational Psychology, 1977, 69, 773-778.